

FREQUENTLY ASKED QUESTIONS

Draft statewide threat & risk assessment for the NSW marine estate

GENERAL QUESTIONS

WHAT IS THE DRAFT NSW MARINE ESTATE THREAT AND RISK ASSESSMENT (STATEWIDE TARA)?

The draft statewide TARA identifies the threats and their associated risk levels (minimal, low, moderate or high) to the environmental assets and the social and economic benefits derived from the NSW marine estate. Examples of environmental assets include clean waters and marine biodiversity and examples of social and economic benefits include swimming at the beach and commercial fishing. The statewide TARA process identified, assessed and prioritised the threats to, and stressors on, these assets and benefits, and determined an associated level of risk.

HOW WAS THE DRAFT STATEWIDE TARA UNDERTAKEN?

The draft statewide TARA was undertaken through three separate threat and risk assessments:

- an assessment of threats and associated risk levels to environmental assets in offshore coastal and marine waters out to three nautical miles (limit of State waters)
- an assessment of threats and associated risk levels to environmental assets in estuaries
- an assessment of threats and associated risk levels to social and economic benefits the NSW community derives from the marine estate.

The draft statewide TARA separates the NSW marine estate into three management regions:

- North region from the NSW/Queensland border (Tweed Heads) to Stockton
- Central region from Stockton to Shellharbour (including the Hawkesbury Shelf marine bioregion)

• South region – from Shellharbour to NSW/Victorian border.

HOW IS THE DRAFT STATEWIDE TARA EVIDENCE-BASED?

The draft statewide TARA seeks to ensure all relevant and credible information sources are used to determine the risk level of each threat. In developing the draft statewide TARA, the Marine Estate Management Authority (MEMA) considered multiple sources of information, for example scientific literature, expert opinion, community and stakeholder views and media reports.

Evidence considered included:

- The Marine Estate Community Survey (Sweeney Research, 2014)
- Information reports prepared by the MEMA agencies and external consultants:
 - Social and economic background information report on the NSW marine estate (Vanderkooi Consulting, 2015)
 - Sea countries of New South Wales: a benefits and threats analysis of Aboriginal people's connections with the marine estate (Feary, 2015)
 - Peer review of 'Sea countries of New South Wales: a benefits and threats analysis of Aboriginal people's connections with the marine estate' (Schnierer, 2015)
 - 4. NSW Marine Estate Threat and Risk Assessment Background Environmental Information (MEMA, 2016a)
- Research, academic papers, unpublished data and information identified by MEMA agencies and independent experts
- Subject matter experts
- Feedback from stakeholders and the community from phase 1 and 2 engagement on the Hawkesbury Shelf marine bioregion assessment (i.e. central region of the draft statewide TARA).

HOW WERE RISKS LEVELS DETERMINED?

The level of risk was determined by considering how much of an impact a threat would have (consequence) and how likely the threat is to occur (likelihood). This was done in accordance with the Threat and Risk Assessment Framework for the NSW Marine Estate and international risk assessment standards (AS/NZS ISO 31000:2009). The draft statewide TARA also highlights areas where information is lacking and further research is needed.

A series of workshops with MEMA agencies and independent environmental, social and economic experts were held to assess the consequence and likelihood to determine a level of risk (minimal, low, moderate, high) for each threat, having regard to the evidence base contained in the background reports and from subject matter experts.

Risk was considered over a 20 year timeframe for all threats, except climate change which was assessed at both 20 and 50 year timeframes.

WHAT IS OUR LEVEL OF CONFIDENCE IN THE RISK LEVELS?

Confidence levels have been assigned to each risklevel.

The following ratings were used in the draft statewide TARA report to reflect the level of confidence in the evidence used to assign risk:

- Adequate there is adequate high quality evidence in the region (A)
- Limited there is limited evidence, for example, there may be limited evidence for a certain region but evidence for other parts of the state (L)
- Inferred there is very limited evidence, for example, there may be limited evidence for the state, but evidence from elsewhere (I).



Risk levels that are inferred are considered to be key knowledge gaps, and gaps will be further considered, when developing the management initiatives for the Marine Estate Management Strategy.

WHAT'S THE DIFFERENCE BETWEEN ACTIVITIES, STRESSORS, THREATS AND RISKS IN THE ASSESSMENT?

A glossary of terms has been developed to help explain some of the terminology used in the draft statewide TARA.

An **activity** is something occurring in the NSW marine estate. The activity may result in a community benefit and/or a threat that poses a level of risk to an environmental asset or social, cultural or economic benefits (e.g. boating, fishing, dredging or shipping).

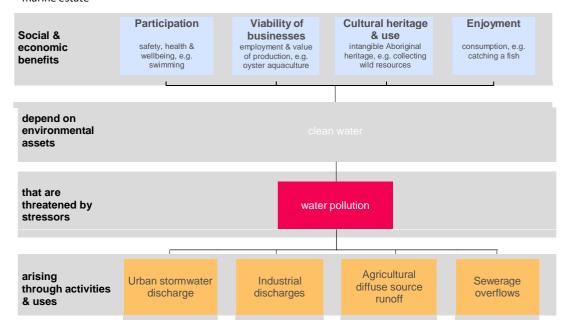
A **stressor** is a consequence or impact of an activity (e.g. water pollution or overcrowding) that causes an effect on an environmental asset (e.g. clean waters) or social and economic benefit (e.g. recreation and tourism activities at a local beach or waterway). Different activities may lead to the same stressors (e.g. foreshore development and dredging activities can produce different forms of water pollution (the stressor) if not managed effectively).

A **threat** is a broad activity, event or process that poses a potential level of risk to an environmental asset or social or economic benefit. Threats often affect multiple assets/benefits and similarly, an asset/benefit may be affected by multiple threats.

A **risk** is the chance of something happening that will have an impact on the achievement of environmental, social or economic objectives.

The following diagram (Figure 1) demonstrates how threats and stressors can have impacts upon social and economic benefits and environmental assets.

Figure 1. How benefits and assets are threatened by stressors arising from activities and uses in the NSW marine estate



WHY ARE THERE DIFFERENT ENVIRONMENTAL AND SOCIAL AND ECONOMIC TARAS?

The environmental TARAs for coastal and marine waters and estuaries examine the threats to environmental assets arising from resource uses and activities which produce stressors to these assets. In contrast, the social and economic TARA was developed by looking through the lens of the NSW community's wellbeing. This means considering the benefits and costs to the community as a whole rather than a particular user group, sector or industry.

There are common stressors to both the environmental and the social and economic TARAs. However, there are also a number of purely social and economic threats and stressors that describe impacts and conflicts between or among the uses and users of the marine estate. These include, for example, access availability, overcrowding, anti-social behaviour and governance of the

marine estate (such as regulation).

DRAFT STATEWIDE TARA FINDINGS

WHAT ARE PRIORITY THREATS AND RISKS?

A key objective of the draft statewide TARA has been to identify the priority threats and risks to environmental assets (estuaries, coastal and marine waters) and social and economic benefits derived from the marine estate. Priority threats are those with the greatest chance of producing adverse effects and are defined by a high or moderate risk level.

A threat was considered to be a statewide priority if it had a high or moderate risk level for each of the three regions across the state (i.e. north, central and south). Risk levels of high or moderate in only one or two regions lead to those risks being identified as regional priorities. Assignment of a high or moderate risk level is a trigger for further examination of the threat to an asset or benefit but will not necessarily lead to a change to current management or regulations.

ESTUARY TARA FINDINGS

Table 1. The statewide priority threats to **estuaries**, from greatest to lowestare:

Threat	Description
Estuary entrance modifications	When the entrance of an estuary changes affecting the volume, frequency, and for how long water flows in and out of the estuary. An example is building training walls to maintain channel depth at the entrance of the estuary
Urban stormwater discharge	Water that runs off urban areas after it rains that goes into our estuaries
Agricultural diffuse source runoff	Water that runs off agricultural lands after it rains that goes into our rivers and then to our estuaries, coastline and ocean waters
Clearing riparian and adjacent habitat including wetland drainage	Clearing of vegetation on our riverbanks, removal of mangroves, seagrass and saltmarsh and draining our wetlands
Recreation and tourism -boating	Recreational vessels including recreational fishing vessels, powerboats, sail boats, canoes and kayaks and the

Threat	Description
and boating infrastructure	infrastructure that supports their use. For example, jetties, pontoons, moorings and boat ramps
Climate Change (20yrs)	The long term change in the earth's climate that is predicted over the next twenty years
Navigation and entrance management and modification, harbour maintenance, etc.	The dredging (removing sediments) of our estuaries and harbours for navigation purposes to maintain their depth and ensure safety for vessels
Sewage effluent and septic runoff	Sewage (waste water) that is released into our estuaries and ocean waters and run off from septic tanks (small scale sewage systems)
Stock grazing of riparian and marine vegetation	Stock (e.g. cattle) grazing on our riverside vegetation and on saltmarsh and mangroves
Modified freshwater flows	When the flow of water in our rivers is modified through either water extraction or the installation of dams and weirs
Foreshore development	Development such as the building of seawalls, wharves, jetties, marinas, and boat ramps or developments that impact on coastal vegetation
Recreation and tourism – four wheel driving	Four wheel driving on our intertidal habitats such as beaches
Commercial Fishing- estuary general	A multi-species, multi-method fishery that operates in 86 NSW estuaries
Oyster Aquaculture	The commercial growing of oysters for human consumption
Recreational fishing – shore-based line and trap fishing	Fishing from the shore using a line or a trap
Recreational fishing – boat-based line and trap fishing	Fishing from a boat using a line or traps
Beach nourishment and grooming	Adding new sand to beaches or mechanically scraping the surface of a beach to remove natural or artificial objects like seagrass or litter

COASTAL AND MARINE TARA FINDINGS

Table 2. The statewide priority threats to **coastal and marine waters,** from greatest to lowest (excluding the 50 year climate risks) are:

Threat	Description
Climate Change (20yrs)	The long term change in the earth's climate that is predicted over the next twenty years
Commercial fishing – ocean trawl	This includes prawn trawling and fish trawling

Threat	Description	
Commercial fishing – ocean trap and line	The is a multi-species fishery targeting fish that live on the bottom and fish that live in the water column. Examples of methods used include demersal fish traps, setlines, trolling and hand held lines.	
Recreational fishing – boat-based line and trap fishing	Fishing from a boat using a line or traps	
Foreshore development	Development such as the building of seawalls, or developments that impact on coastal vegetation and beaches	
Urban stormwater discharge	Run off in urban areas after it rains that goes into our coastline and ocean waters	
Commercial fishing – ocean haul	This is a fishery targeting finfish species such as pilchards, mullet and Australian Salmon using purse seine nets from sea beaches	
Recreational fishing – shore-based line and trap fishing	Fishing from the shore using a line or a trap	
Estuary entrance modification and breakwaters	When the entrance of an estuary changes affecting the volume, frequency, and for how long water flows in and out of the estuary. An example is building training walls to maintain channel depth at the entrance of the estuary	
Beach nourishment and grooming	Adding new sand to one of our beaches and mechanically scraping the surface of a beach to remove natural or artificial objects like litter	
Recreational fishing – hand gathering	Hand gathering of algae and species like pipis, beach worms and cunjevoi for food and bait	
Charter activities – whale and dolphin watching	Whale and dolphin watching from commercial vessels	
Shipping – small commercial vessels	These are small vessels like tugs, ferries, charter boats and fishing vessels	

COMBINED STATEWIDE PRIORITY THREATS AND RISKS FOR ENVIRONMENTAL ASSETS

The estuary and coastal and marine water TARA findings were combined to form a single statewide list of priority threats to environmental assets. Estuaries had a much greater proportion of high and moderate risks compared to coastal and marine areas, therefore estuary risks tend to dominate the combined results.

A single social and economic TARA was developed, so no combination process was required for this TARA.

Table 3. The statewide combined priority threats to **environmental assets**, from greatest to lowest are:

Threat	Description
Estuary entrance modifications	An example is building training walls at the entrance of an estuary affecting both the estuary and the open coast
Urban stormwater discharge	Water that runs off urban areas after it rains that goes into our estuaries, coastline and ocean waters
Agricultural diffuse source runoff (in estuaries)	Water that runs off agricultural lands after it rains that goes into our rivers and then to our estuaries, coastline and ocean waters
Clearing riparian and adjacent habitat including wetland drainage (in estuaries)	Clearing of vegetation on our riverbanks, removal of mangroves and saltmarsh and draining our wetlands
Climate change (20 years)	The long term change in the earth's climate that is predicted over the next twenty years
Recreation and tourism - boating and boating infrastructure (in estuaries)	Recreational vessels including recreational fishing vessels, powerboats, sail boats, canoes and kayaks and the infrastructure that supports their use. For example, jetties, pontoons, moorings and boat ramps
Navigation and entrance management and modification, harbour maintenance (in estuaries)	The dredging (removing sediments) of our estuaries and harbours for navigation purposes to maintain their depth and ensure safety for vessels
Sewage effluent and septic runoff (in estuaries)	Sewage (waste water) that is released into our estuaries and run off from septic tanks (small scale sewage systems)
Stock grazing of riparian and marine vegetation (in estuaries)	Stock (e.g. cattle) grazing on our riverside vegetation and on saltmarsh and mangroves
Foreshore development	Development such as the building of seawalls, wharves, jetties, marinas, and boat ramps or developments that impact on coastal habitats in estuaries and the open coast
Modified freshwater flows (in estuaries)	When the flow of water in our rivers is modified through either water extraction or the installation of dams and weirs
Recreation and tourism – four wheel driving (in estuaries)	Four wheel driving on our intertidal habitats such as beaches
Commercial fishing – ocean trawl	This includes prawn trawling and fish trawling
Commercial fishing – ocean trap and line	The is a multi-species fishery targeting fish that live on the bottom and fish that live in the water column. Examples of methods used include demersal fish traps, setlines, trolling and hand held lines
Commercial fishing – estuary general (in estuaries)	A multi-species, multi-method fishery that operates in 86 NSW estuaries

Threat	Description
Recreational fishing – boat-based line and trap fishing	Fishing from a boat using a line or trap in both estuaries and the open coast
Oyster aquaculture (in estuaries)	The commercial growing of oysters for human consumption
Commercial fishing – ocean haul	This is a fishery targeting finfish species such as pilchards, mullet and Australian Salmon using purse seine nets from sea beaches
Recreational fishing – shore- based line and trap fishing	Fishing from the shore using a line or a trap in both estuaries and the open coast
Beach nourishment and grooming	Adding new sand to beaches or mechanically scraping the surface of a beach to remove natural or artificial objects like litter in both estuaries and the open coast
Recreational fishing – hand gathering	Hand gathering of algae and species like pipis, beach worms and cunjevoi for food and bait on the open coast
Charter activities – whale and dolphin watching	Whale and dolphin watching from commercial vessels
Shipping – small commercial vessels	These are small vessels like tugs, ferries, charter boats and fishing vessels

SOCIAL AND ECONOMIC TARA FINDINGS

Table 4. The statewide priority threats to **social and economic benefits**, from greatest to lowest are:

Threat	Description	
Climate change (20 years)	The long term change in the earth's climate that is predicted over the next twenty years	
Inadequate social and economic information	Lack of social and economic research studies to inform decision making	
Urban stormwater discharge	Impacts from urban run-off that affect our use of estuaries, coastline and ocean waters	
Agricultural diffuse source runoff	Impacts from agricultural run off that affect our use of estuaries, coastline and ocean waters	
Anti-social behaviour and unsafe practices	Menacing behaviour, human to human interactions, vandalism	
Limited or lack of access infrastructure to the marine estate	Lack of facilities and access points such as boatramps, moorings, car parks and disabled facilities	
Reductions in the number of fish at the top and the bottom of the food chain from commercial, recreational and charter fishing	The harvest from fishing activities that result in a reduction in abundance of individual species or levels in the food chain	

Threat	Description
Litter, solid waste, marine debris and micro plastics	Litter in the water and on beaches and microplastics in the water and on beaches from personal care products
Lack of compliance with regulations (by users) or lack of compliance effort (by agencies)	When marine estate users do not follow regulations or there are not enough compliance officers on ground to ensure users comply
Inadequate, inefficient regulation, over-regulation (by agencies)	When governments either do not regulate an activity enough, in the best way, or too much
Loss of public access (either by private development or government area closures)	Loss of access to favourite places when private development occurs, or saltwater fishing closures or sanctuary zones are introduced
Habitat (physical) disturbance (e.g. from foreshore development, commercial and recreational fishing methods, four wheel driving, and extractive industries (mining)	The damage to habitat for species such as shorebirds and turtles from various activities such as mining, foreshore development and fishing
Wildlife disturbance (shorebirds, turtles, whales) by dog walkers, four wheel driving, marine vessels etc.	Wildlife, including shorebirds, turtles and marine mammals are disturbed from activities like dog walking, four wheel driving and recreational boating to a point where it has negative impacts
Lack of community awareness of the marine estate, associated threats and benefits, regulations and opportunities for participation	When the community doesn't know about the benefits of the marine estate, the threats to these and how government is managing them
Overcrowding/congestion	Where there are too many people in one place or using limited infrastructure
Loss or decline in marine industries	When marine industries, such as commercial fishing, aquaculture or tourism are disappearing
Pests/diseases	Marine pests and diseases that impact on plants, animals and ecosystems or business viability
Modified hydrology/hydraulics and flow regimes	When the flow and volume of water moving through rivers and estuaries is changed by human activities and infrastructure
Seafood contamination	Seafood that is contaminated with metals, industrial chemicals, agricultural pesticides or diseases
Lack of or ineffective community engagement or participation in governance	Includes aspects such as a lack of evidence, political standing and regulation

OTHER QUESTIONS YOU MIGHT HAVE

WHAT ABOUT CUMULATIVE THREATS OR RISKS?

Cumulative risks were raised in the formal risk evaluation process undertaken by the Marine Estate Expert Knowledge Panel (MEEKP). This approach looked at threats and risk at a systems level by identifying cumulative impacts to assets and benefits and ensuring that threats which interact or accumulate were identified in the TARA.

In addition to the priority threats identified in the TARA, MEMA has identified the need to assess the management of several cumulative threats and risks including:

- Fisheries in terms of management of fish assemblages and the uncertainty associated with potential impacts from fishing activities on trophic structure and function of marine ecosystems.
- Estuaries in terms of their role as a receiving water quality environment and the need to avoid management of key stressors in isolation (e.g. diffuse agricultural, diffuse urban stormwater, point sources, microplastics, sediment contamination, and other sources of water pollution should be considered as part of systems-based management approach).
- **Climate change** noting the imperative to move toward practical adaptation/resilience building actions that can be taken now to protect the assets and benefits of the marine estate rather than waiting for impacts to occur.

There are key knowledge gaps associated with these cumulative risks that will be considered by MEMA as part of the next steps.



An assignment of a high or moderate risk level as part of the draft statewide TARA process is a trigger for further consideration of the threat. This process will consider if increased or additional management controls are needed (Table 5). However this will not necessarily lead to a change in management or regulations. Likewise, a risk level of minimal or low indicates the risk is currently acceptable but still needs to be considered and monitored over time – particularly where there is poor information or evidence.

MEMA will further evaluate the assigned risks with a view to determining appropriate tolerance levels and treatment options consistent with the TARA framework and adopted standards for risk management.

Any future management initiatives that are proposed will involve further community and stakeholder engagement, during the development of the Marine Estate Management Strategy. Until then, existing management arrangements will remain in place.

Table 5. Generic risk tolerance table

Risk Levels	Description	Likely Management Action
Minimal	Risk currently acceptable but trend in the risk to be tracked over time	Existing control measures (if any) are suitable. Monitoring of risk likelihood and consequence over time to identify if risk is increasing, decreasing or staying the same.
Low	Risk likely to be acceptable but trend to be tracked over time	Existing control measures (if any) are suitable. Monitoring of risk likelihood and consequence over time to identify if risk is increasing,

Risk Levels	Description	Likely Management Action
		decreasing or staying the same.
Moderate	Risk may be acceptable with suitable risk control measures in place	Review of existing management controls or activities for the risk. Increased or different management controls or activities may be needed.
High	Risk less likely to be acceptable; additional risk control measures may need to be considered	Review of existing management controls or activities for the risk. Increased or different management controls or activities are likely to be needed.

WHY WAS THERE A SEPARATE THREAT AND RISK ASSESSMENT DONE FOR THE HAWKESBURY SHELF MARINE BIOREGION AND HOW DOES THIS RELATE TO THE STATEWIDE TARA?

The NSW Government's response to the Independent Scientific Audit of Marine Parks in NSW (2013) included a commitment to explore ways of enhancing marine biodiversity conservation in the key gaps identified by the audit, namely the Hawkesbury and Twofold Shelf marine bioregions.

In line with the five step decision making process for marine estate management, a bioregional scale threat and risk assessment was initially undertaken in the Hawkesbury Shelf marine bioregion. The process assessed threats, at a bioregional scale, that may require management initiatives unique to the bioregion.

The draft statewide TARA has been informed by the earlier Hawkesbury Shelf marine bioregion TARA process. The TARA process has also been revised and improved based on feedback received during community engagement on the Hawkesbury Shelf marine bioregion Discussion Paper in early 2016 and the collection of new evidence.

In a small number of cases, risk levels within the Hawkesbury Shelf marine bioregion, covered by the central region, have changed as a result of further assessment and evaluation.

WHY HAVE SOME OF THE RISK LEVELS IDENTIFIED IN THE HAWKESBURY SHELF MARINE BIOREGION TARA CHANGED FOR THE EQUIVALENT REGION (THE CENTRAL REGION) OF THE STATEWIDE TARA?

Since the Hawkesbury Shelf marine bioregion TARA was carried out, a process to validate risk levels through a formal risk evaluation has been undertaken. As a result, new evidence has been incorporated in the draft statewide TARA

which has resulted in changes to final risklevels.

Other changes to the statewide TARA process included reframing the social and economic TARA through a community wellbeing lens rather than a sector based approach, i.e. considering the benefits and costs to the community as a whole rather than a particular user group, sector or industry.

The results in the draft statewide TARA take precedence over the earlier Hawkesbury Shelf marine bioregion TARA.

HOW DOES THE DRAFT STATEWIDE TARA INFORM MARINE PARK MANAGEMENT IN NSW?

The final statewide TARA will be used to inform the consideration of management responses to address priority threats and stressors at varying scales including:

regionally and statewide via the Marine Estate Management Strategy, and

 regionally and locally via new management plans for existing marine parks, beginning with Batemans Marine Park and Solitary Islands Marine Park.

Priority threats and risks that are best addressed by spatial management, such as marine protected areas, will be identified and management responses developed as part of the new management plans for marine parks. This process will include an assessment of current management arrangements to identify changes needed to better address priority threats and to maximise community benefits. These plans will replace existing marine park zoning and operational plans.

MEMA will engage stakeholders, the community and MarinePark Advisory Committees in developing new management plans for marine parks.



HOW CAN I HAVE MY SAY ABOUT THE EVIDENCE AND FINDINGS OF THE DRAFT STATEWIDE TARA?

We have developed an interactive tool to help you to navigate, interrogate and provide feedback to inform the findings of the draft statewide TARA. If you have any comments on the evidence and findings of the draft statewide TARA you are invited to make a submission through the interactive TARA tool at www.marine.nsw.gov.au. Please provide comment if you:

- think there are omissions or inaccuracies within the draft statewide TARA
- are able to provide additional evidence (environmental, social or economic) in relation to stressors, threats and risks. This may include, for example, scientific research or reports, unpublished data/research or supporting background reports.

Through the TARA tool you can provide specific comments and evidence on individual risk levels or submit overall feedback on the draft statewide TARA report. This information will be reviewed and used to inform the finalisation of the statewide TARA report. There are tips on how to use the online tool and a specific FAQs – TARA tool document to assist you to make your submission. Submissions through the TARA interactive tool can be made until **18 April 2017**.

WHAT CONSTITUTES EVIDENCE THAT WILL BE CONSIDERED TO HELP FINALISE THE STATEWIDE TARA?

Scientific research or reports, unpublished data/research or supporting background reports are all good examples of the types of evidence we can use. The process of developing the draft statewide TARA has been rigorous and defensible, and critiqued at multiple steps in the process by independent experts. It is intended to maintain the same level of rigour during the finalisation of the statewide TARA.

NEXT STEPS

WHAT ARE THE NEXT STEPS FOR THE DRAFT STATEWIDE TARA?

The community and key stakeholders currently have the opportunity to provide comments and additional evidence to be considered in finalising the statewide TARA (as above).

Once finalised, MEMA will review and assess the adequacy of the current management settings and alternative options for addressing the priority threats and risks. This will form the key components of the Marine Estate Management Strategy.

Opportunies will be provided for the community and stakeholders to provide feedback on draft management initiatives and the draft Strategy once developed.

WHERE CAN I FIND MORE INFORMATION?

The New South Wales Marine Estate Threat and Risk Assessment Draft Report, TARA Environmental Background Report and a Social and Economic TARA reference list are available at www.marine.nsw.gov.au and this website will be updated as the project continues.

If you would like to receive updates on the statewide TARA or other marine estate initiatives please advise us via contact.us@marine.nsw.gov.au and provide your name, email address and postcode.

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